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Essay on Characteristics of the Quadruplet Elements and Strategic Analysis of the Performance of It in Traditional and Modern Architecture

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ABSTRACT: Our ancestors were attention to nature and to preserve the purity and sanctity of it. This is particularly has been true in the four main elements (water, wind, soil, fire) that commonly referred to as material prima. The way that culture and literature is also very expressed. This is also evident in their architecture and the build. That can lead to environment from architecture and design of building. The importance of the issue to be determined by that time, that we face with the lake of energy resources and environmental pollution with the progress of technology, industrialization and increased fossil fuel use. The idea of Strategic analysis in this article to what methods can help to resume the relationship of man and nature elements. In line with the aim, with the Swot method we will examine the strength, weaknesses, opportunities, threats about employing the above elements and the approach the maximum exploitation of the dominant element in any area or in other words ecology**.**

Keywords: Quadruplet Elements**,** Ecology Architecture, Swot, Renewable Energy, Sustainable Architecture

ORIGINAL ARTICLE

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INTRODUCTION

"Do not imitate ever anything, unless its natural forms" (Ruskin, 1906).

The quadruplet elements in culture and literature can be observed in most countries. However, our literature has paid special attention to the four elements. Water, wind or air, soil or plant, fire or light mother and seven heavens, that father of nature have been called (Bolkhari, 2005). In the Shahnameh are mentioned lots of these elements. From the start you must know it

Nature's treasure in the first
Nature's treasure is the four
Created without suffering and time
One of them was bright fire
Among water and wind from the dark soil (Ferdowsi, 1966).

Or in many texts, rather than the four elements of nature has spoken. The miracle of nature they consider the harmony and combined between form and function. Man emerged from the nature and origin of the unique properties. Sometimes human Take effect from nature by innate pattern and sometimes it impress nature by thinking and science power (Rezaei Tahriri, 2005). On the other hand, some scientists believe that conception of the nature is wider the mountain and sea and plant. Nature in general concept includes nature and human nature and also refers to the outside world (Bolkhari, 2009) .Many of the elements that exist in nature, in human existence was deposited. Those eventually make manifest the nature of God. Manifestation factor in this connection is in the numerical calculations and geometric proportions. Which in construction of temples and the house of God, it was using (Bolkhari, 2005).

But what matters appears how to use these concepts and Philosophies are. All quadruplet elements of ritual and philosophical have been containing excellent application environmental in Iranian civilization (Sadian, 2011). For example, use of two elements the water and the wind that are manifested in the form of MILL and ASBAD. High capacity environmental sustainability and balancing the built environment with the natural environment, is. Or soil and fire elements that can be studied in fire temple or monasteries. But, Today it can be came to the conclusion which utilizes the elements of nature in every region and even each individual can have their own building. In many places, we can use of materials and elements on site (Rocca, 2007) (Figures 1and 2).

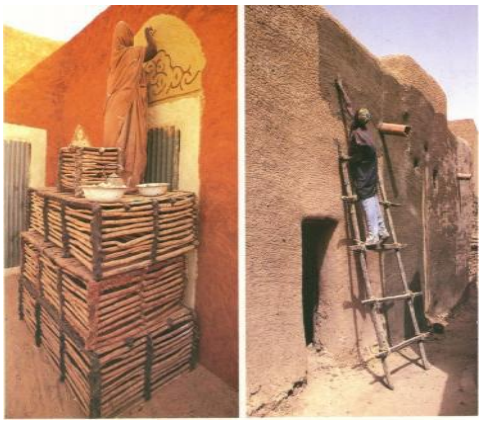

Figure 1.

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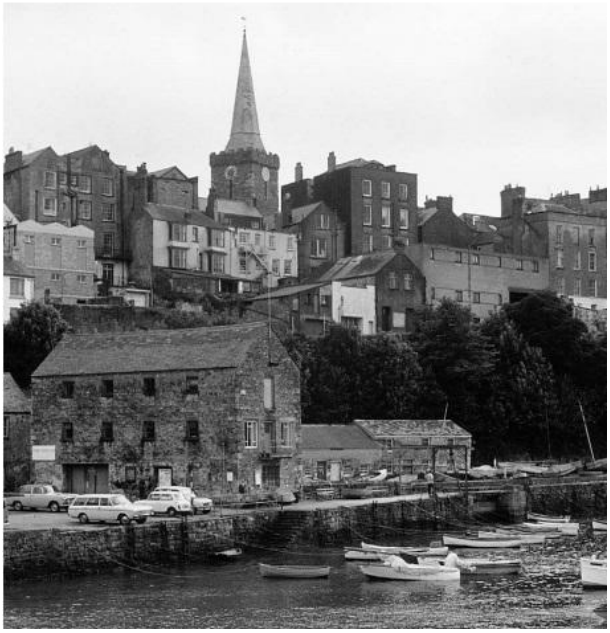

Figure 2.

SUBJECT IMPORTANT

Today, due to the use of fossil fuels and arrival of modern culture and subsequent the technology, the problem of energy crisis has posed. According to the TV Shows made on the Status of land with title of HOME a few industrialized nations consume more than 70 percent of oil resources. While in the Middle East has the largest oil reserve Oil is less than 35% of its initial value. In addition, to the seas by oil pollution and vessels irreparable damages have arrived. The issue of population growth and the increasing need for food increases require that farming is more. That has led to cut the trees several hundred years old and forest conversion to agricultural land. Cars and buildings accounted 40% of energy consumption make an entry greenhouse gases in atmosphere and intensify the process. The result is climate change and global warming.

On the other hand, adverse effect which has of the mechanical life on the morale of the modern people is undeniable. Today is no longer the spirit of old buildings, anymore architects doing pay attention to the spirit of the living space (Eftekharzadeh, 2007). If sustainable development is development that the current human needs to meet without jeopardizing the needs of future generations and that environment is also pay attention (Nazeri Naeeini, 2011), Former writings indicate the lack of sustainable development in the environment. Solution, using nature and its elements which for centuries have rationed their stability and the energy required for organisms that live in has provided in the best condition. Antony Gaudi's state shows the necessity of attention to the elements of nature:

"Man does not create but discovers because everything in nature forms is hidden. Artist must have gone into it and find it. All the details of things production are contained in the nature" (Rezaei Tahriri, 2005).

In other words, this knowledge can be called Bionic. First time Major (Jack A Steels) defined it. Bionic is the science of systems that living systems are the foundation or contain properties of living system. For example; the EGLO Building is making at -60 degree by the Eskimos that with body heat or a candle be warm. Characteristic of the low thermal conductivity of snow uses. There are many examples of this in nature; plants which grow in the area of suitable climatic. Contain many branches and leaves, but the plants are grown in water scarce regions have thicker stems (cactus) or the bulk of them grow in subsoil. These have been sources of inspiration to many local architects. Like Domes and multiplicative arches that always make shadow on one side or some rural architecture, such as Kandowan and Abyaneh are compatible with its environment.

But the architecture of today with population problems and the need to build faster and ... What is the solution? Perhaps the least use of the quadruplet elements is use of them as materials (Eftekharzadeh, 2007). It is a pleasure, because of its complex for the human mind. Mind is seeking the difference in similarities and the Similarity in differences. The human brain has a natural structure. To evaluate information based on the turbulence. So, gratifying to understand the brain system free from aesthetic issues is chaotic system (Glieck, 2008). That Fractal geometry can be partly it would appear. This order in disorder cause to be provided feed calculation for the brain. And repeating in it is not seen.

This feature is found in the quadruplet elements. Rock fragments or handful of soil or Fire Flares, it is a smaller scale of all and each piece is like any other piece (Eftekharzadeh, 2007) .Microstructures in explanation for this pattern are important and are used in as large scale. Materials such as published metals, glass and reflective material contain fine structures are similar to the total, so they paid more attention to the edges and after of time don't arouse the beauty sense. However, natural material in particular form and textures, both in microstructures and general scale that have changed overtime, the eyes are focused on the surface To the edge , and a sense of unity in diversity and diversity in unity are reminiscent (2007). It always indoctrinates an aesthetic sense and freshness (Fig 3).

Figure 3

Water: holy element that is embodies the purity and elegance of life (Bolkhari, 2009). Its logo is cup in art (Namvar Motlagh, 2005). First element that was created. Water contains extraordinary properties; the sound water is relaxing and makes clear the mind (Eftekharzadeh, 2007). Moderate; the ambient temperatures. Because of the high heat storage temperatures transmit to the ambient (Nazeri Naeeini, 2011). In the past, large water tank inside the house was in charge of this task. But today with change of the physical structure of most residential areas from the house with a yard to apartments and residential, in addition to its functional use within building as fountain of life and watery wall, to aesthetic applications such as pond or water fountain or sit on the crooked window (a window that you could see the sky) also noted (Eftekharzadeh, 2007).

Wind: it is also good and bad. Its logo is bird (NamvarMotlagh, 2005). And its use is dependent on the environment. In the past, as BADGIR and ASBAD and… it was enjoying. But now with advances of technology and changes in life style that can be used in the role of movement patterns and wind power plants in national application of the most appropriate use of nature resources is.

Fire (light): fire is an important element of the quadruplet elements, its logo is lion. It has been involved in the creation of human and animal (2005). In the past much attention has been divided living spaces with radiation pattern. (Summer and winter stay) (Nazeri Naeein, 2011). If we want an example let's use a night torch that they profited (Eftekharzadeh, 2007). Because of the source of light and fire are constantly changing and special penumbras to create. Using them will never be boring. Today viewing the light can be used, (2007) or for the production of clean energy from Photovoltaic utilize.

Soil (plant): it is referred to as mother of humanity, Its logo is snake element (NamvarMotlagh, 2005). In the past, with building of the underground were enjoing heat capacities of the high soil. Today can be directly utilized of the element in manufacture of objects or part of the building of it, the soul of the nature to live in life space (Nazeri Naeeini, 2011). or from geothermal energy for power generation can be used without harm to the environment.

Questions and Hypotheses

- Capacity and capability to implement the quadruplet elements in today the country architecture to what extent can it be?
- Technology and change in the physical structure of the quadruplet elements to what extent helps to use these in today's technology architecture?

Application of the Swot in the Analysis of Problem

SWOT method: Technique or Swot matrix is sometimes called tows, means for identifying threats and opportunities available in the external environment of a system and recognition of internal strengths and weaknesses in order to assess the situation and formulate strategies is to drive and control the direct result of the (Swot) model that system. This is method of Harvard Business School. In fact, this is the best strategy for organizations (Moradi Masihi, 2002). In brief, we can say that this technique is a tool for situational analysis and the strategy formulation and these things through.

- Recognition and classification of internal strengths and weaknesses system
- Recognition and classification the opportunities and threats in the environment outside the system
- Completing the Swot matrix; and formulating various strategies to guide future system will be (Golkar, 2006).

In other word, the Swot model is one of the strategic tools the accordance within the system's strengths and weaknesses with external opportunities and threats in the system. A systematic analysis of the Swot model to identify these and select the strategy

Those best match between them, to create offers in terms of this model, an appropriate strategy to maximize their strengths and the opportunities and minimize threats and weaknesses. For this purpose, strengths, weaknesses, opportunities and threats are linked to four general cases, WO, ST and WT and the option strategies are chosen from among them (Harrison, 2003).

For this purpose 20 questionnaire were the professional architecture and structure. Using information obtained from Swot and in the following tables is provided. How to calculate the values of the parameters in table strengths, weaknesses, opportunities and threats is follows. Early coefficient by equation (1), weighted average by equation (2), rated by equation (3) and the final coefficient was calculated by the equation (4).

$$Z_i = \sum_{i=1}^{n} a_{ij} \qquad (1)$$

$$M_i = \frac{z_j}{\sum_{j=1}^{m} z_j} \qquad (2)$$

$$R_j = \frac{1}{n} \sum_{i=1}^{n} b_{ij} \qquad (3)$$

$$A_j = \frac{z_j}{\sum_{j=1}^{m} z_j} \times R_j \qquad (4)$$

In this respects Z_i early coefficient, M_i weighted average, R_i = rank, A_i=final coefficient, i=1counter subjects=1 counter question or parameter, n; number of response; total of question, aij; the answer of ith subject the validation parameters, bij; is the answer ith to coefficient or the rate parameter jth.

The average of final coefficient is 3.63. According to the figure is close to the number 4, this result is of designated items are proper. Meanwhile, can be the weighted average of each factor, determines the level of its significance. As presented in Figure (1) in diagram strategy, we can with Swot matrix determine the strategies.

Figure 1. A matrix assessment the Strategic factors of Swot.

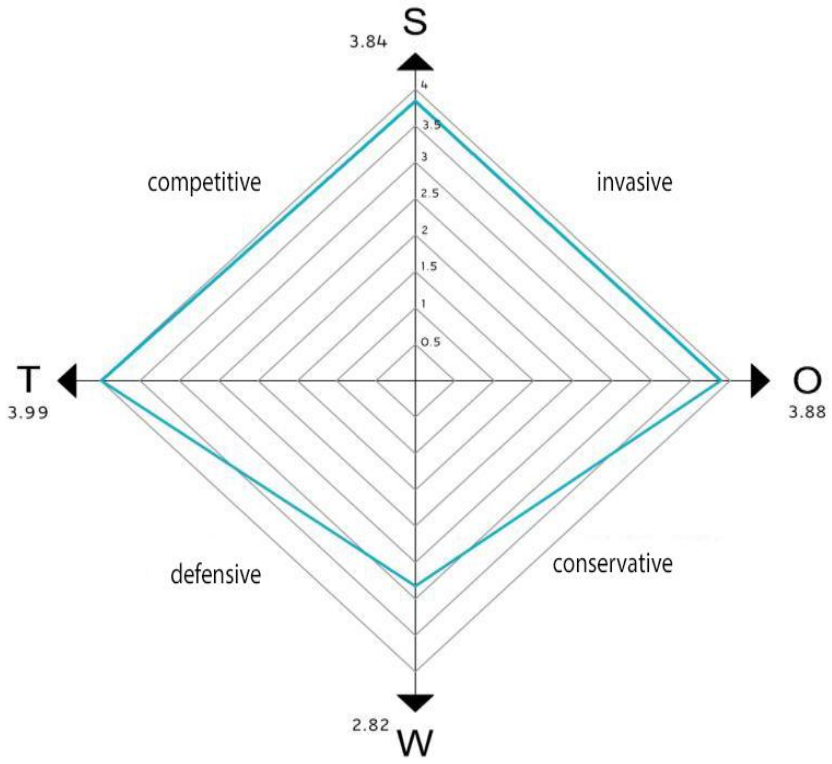

Table 1. Assessment the internal factors of strengths

Factors	Early Coefficient	Weighted Average	Rank	Final Coefficient
S1-Prevent environmental pollution	84	0.121	4	0.484
S2-reduce waste	81	0.117	4	0.468
S3-easy access	72	0.104	4	0.416
S4-enargy conservation	82	0.118	4	0.472
S5-high load capacity	50	0.072	2	0.144
S6-low running cost	79	0.114	4	0.456
S7-ease of implementation	79	0.114	4	0.456
S8-good insulation against cold and heat	76	0.109	4	0.436
S9- balancing the life(sustainable energy systems)	88	0.127	4	0.508
Total	691			3.84

Table 2. Assessment the internal factors of weaknesses

Factors	Early Coefficient	Weighted Average	Rank	Final Coefficient
W1- resistance to earthquake	65	0.210	3	0.63
W2-cohesion and rigidly material	53	0.171	2	0.342
W3-Impurities	64	0.207	3	0.621
W4-low resistance elements against **C**orrosion	69	0.223	3	0.669
W5-Take advantage of the thermal cooling facilities	58	0.187	3	0.561
Total	309			2.82

Table 3. Assessment the external factors opportunities

Factors	Early Coefficient	Weighted Average	Rank	Final Coefficient
O1-international congress on the quadruplet	76	0.123	4	0.492
O2-increasing tourism According to specific design region	82	0.132	4	0.528
o3-reduced demand for construction material	60	0.97	3	0.291
O4-possible construction industry(especially in times of crisis)	72	0.116	4	0.464
O5-building by local people	86	0.139	4	0.556
O6-indigenous knowledge about the location of the deployment element	79	0.128	4	0.512
O7-climent-related jobs in the region	82	0.132	4	0.528
O8-existence cities with dominant element	80	0.129	4	0.516
Total	617			3.88

Table 4. Assessment the external factors of threats

Factors	Early Coefficient	Weighted Average	Rank	Final Coefficient
T1-log in modern high-tech materials	83	0.344	4	1.376
T2-change people's mind(they believe them as inferior and poor)	82	0.34	4	1.36
T3-change in social life	79	0.315	4	1.26
Total	241			3.99

Swot matrix:

In this matrix we combined the internal and external factors and with chart give priorities to the strategies

ST, competitive strategy or strategy maximize – minimum: Use strengths to avoid threats. The purpose of this strategy, maximum benefit of the strengths and internal advantages to deal with pitfalls, threats and external harmful (environmental) and deliver them to the minimum (Nilsson, 2004)

SO invasive strategy or the strategy minimum – maximum*:* In this approach by utilizes the strengths trying to exploit the opportunities. This strategy indicates the most desirable position and move from each position in the Swot matrix to the ideal situation that can with its reliance to use all the position points, advantages and competencies to maximize opportunities, demands and opportunities (2004)

WT defensive strategy or strategy minimum-minimum: Minimize weaknesses and to avoid threats. The purpose of the strategies**,** to minimize vulnerable and weaknesses aspects, is also threats and external bottlenecks. In this situation that is the most warring strategy situation, there are strongly need to reassess**,** modify and reinforcement the structure, performance, objectives and strategic policies (2002).

WO conservative strategy or strategy maximum – minimum: By utilizing opportunities get out the weaknesses. The aim of the strategy is to reduce and minimize weaknesses and vulnerable aspects and maximize opportunities, positions and demands (2002).

In the table5, in according to weight average of each factor is arranged and also Strategies are ranked.

Table 5. syntheses the internal and external factors

Internal factors	**Strengths**	**Weaknesses**
	S9- balancing the life(sustainable energy systems)	W4- low resistance elements against corrosion
	S1-Prevent environmental pollution	W1- resistance to earthquake
	S4-enargy conservation	W3-Impurities
	S2-reduce waste	
	S6-low running cost	W5-Take advantage of the thermal cooling facilities
	S7-ease of implementation	
	S8-good insulation against cold and heat	W2-cohesion and rigidly material
	S3-easy access	
External factors	S5-high load capacity	
opportunities	Invasive strategy	Conservative strategy
O5-building by local people	SO1- taking advantage of the natural potential of the region in order to create new job opportunities and crease income of local people	WO1- enjoying the industrial product and the design specialist to produce materials that the natives need , so that enjoy the strength enough and resist in atmospheric factors
O7-climent-related jobs in the region		
O2-increasing tourism According to specific design region	SO2- in addition to maintaining the dominant pattern each area, good infrastructure and networking and equip areas for the use of tourists	WO2-proper supervision during construction and of earthquake resistant building as well as proper execution based on maintaining environment
O8-existence cities with dominant element		WO3-natives education in order to help tourists and provide them with the necessity explanation
O6-indigenous knowledge about the location of the deployment element	SO3- use of customs and the rich culture of local people in advancing tourism development plans	WO4-taking advantage of the capabilities of NGOs for training and maintenance and repair buildings against earthquake
O1-international congress on the quadruplet	SO4-environmental legislation to tighten charge and restrictions further	WO5-funding requirements of environmental protection from tourism and fine adopted
O4-possible construction industry(especially in times of crisis)	SO5-use of facilities and experiences international organizations in order to organize and increase individuals knowledge in any area	
o3-reduced demand for construction material		
threats	Competitive strategy	Defensive strategy
T1-log in modern high-tech materials	ST1- efforts to promote the materials security and public awareness for the role of these elements in order to maintain ecosystem	WT1-invironmental strategic plans in order to control the population density, emissions and land use changes
T2-change people's mind(they believe them as inferior and poor)	ST2-- introduction elements at national-international level and creating job opportunities based on local potential	WT2-predict entrepreneurial projects in the region to attract investment
T3-change in social life	ST3- Improve food quality of structural view and competitive with modern materials	WT3-provide training to local people about their behavior and attitude change about the application of the relevant elements
	ST4-the involvement of local people for the building ,so that each family has its own building	

CONCLUSIONS

According to the mentioned discussion and with regard to the natural elements in traditional architecture, can achieve the result. That attention to sustainable architecture and affective building in clean and renewable energy use in the course of history, it is undeniable.

Changing global attitudes to the issued of non-renewable energy, the high cost of environmental aspects, psychological and… imposes to man, a deeper review of the nature and renewable energy has caused.

Should be pointed out among the elements that are used to serve the architectural quadruplet elements (water, wind, soil and fire) to be devoted a special place.

Presentation and analysis of data collected in this study, it reminds us that despite the threats of entry materials such as high-tech, changing the mentality people to ecology material as well, the change of social lifestyle, these threats can be eliminated by providing scientific strategies and create opportunities In order to use the quadruplet elements and the ecology of the area, try to promote sustainable architecture. Including the strategy would be to mention the following:

- To promote the security of ecologically materials and public awareness for the role of these elements in maintaining ecosystems.

- Better quality of structure and become competitive materials with modern materials.

- Proper supervision during construction and determine the resistance against earthquake.

- Introduction of the elements in international level.

From what passed can be concluded that the modern architecture should with proper utilization of quadruplet elements that are underpin the ecological architecture, tries to promote sustainable architecture, to the interaction between human and their environment not to interfere.

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